REMARKS

Summary of the Office Action

Claims 1-32 are pending.

Claims 1-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Barnsley et al U.S. Patent No. 4,941,193 (hereinafter "the '193 patent") in view of Bristol U.S. Patent No. 5,774,385 (hereinafter "Bristol"), and Boorthroyd Publication entitled "Chaos Systems: Electronic Applications Reap the Benefits" (hereinafter "Boothroyd").

Claims 11, 12, 16-25, and 28-32 were rejected under 35 U.S.C. § 103(a) over the '193 patent in view of Barnsley et al. U.S. Patent No. 5,347,600 (hereinafter "the '600 patent") and further in view of Boothroyd.

Claims 13-15 and 26-27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the '193 patent in view of the '600 patent and further in view of Boothroyd and further in view of Bristol.

Summary of the Applicant's Amendments

Applicant has amended claims 1-11 in order to more particularly point out and distinctly claim the subject matter that Applicant regards as the invention.

Applicant has added new claims 33-45 in order to more particularly point out and distinctly claim the subject matter that Applicant regards as the invention.

Applicant has cancelled claims 13 and 15 in light of the amendments to independent claim 11 from which claims 13 and 15 depend.

Applicant's Response to the Examiner's Rejections of Claims 1-10

Claims 1-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the '193 patent in view of Bristol and further in view of Boothroyd.

The Examiner stated that the "Examiner totally disagrees" with Applicant's arguments for claims 1-10 and that "Barnsley, Boothroyd, and Bristol do not need to disclose anything over and above the invention as claimed in order to render it unpatentable." (Office Action, pages 12-13).

Yet, the '193 patent, Boothroyd, and Bristol do not show or suggest many of the features of independent claims 1, 5, and 8. For example, none of the prior art, used either alone

or in combination, shows or suggests Applicant's inventions of claims 1, 5, and 8 of obtaining

initialization codes for detrended image slices or compressing data using orbital geometry.

Obtaining Initialization Codes for Detrended Image Slices

Applicant's inventions, as defined by claims 1, 5, and 8, detrend an image slice

so that initialization codes, representative of waveforms associated with particular periodic

orbits, can be obtained for the detrended image slice. These initialization codes are utilized as

part of the compressed file.

The '193 patent discusses using fractal geometry to compress an image file.

Bristol discusses determining trend segments to approximate a data stream.

Bristol then sends these trend segments as compressed data.

Boothroyd discusses the state of chaotic research at a number of institutions. At

one such institution, chaotic systems are being used to synthesize sound.

The Examiner stated that Bristol discusses "the use of trend line and its

calculation" in that "the compression method executed by the instructions stored in the program

memory ... [are] identified as ... Trend Compression Method" (Office Action, page 4).

Yet, merely the use of a Trend Compression Method does not show or suggest

Applicant's inventions, as defined by claims 1, 5, and 8, of detrending an image slice so that

initialization codes, representative of waveforms associated with particular periodic orbits, can

be obtained for the detrended image slice.

Bristol only determines trends as line segments in a data stream and sends these

trends as compressed data. More Particularly Bristol discusses an:

> "output stream of compressed data [that] consists of best-fit line segments, which
> provide an approximation of the input data stream"
> (Bristol, col. 5, line 67 to col. 6, line 2).

Accordingly, Bristol does not show or suggest detrending an image – let alone an image slice –

such that initialization codes, representative of waveforms associated with periodic orbits, can be

obtained and used as part of a compressed file.

Applicant's inventions of claims of 1, 5, and 8, however, uses initialization codes,

representative of waveforms associated with periodic orbits, as part of a compressed file.

Applicant detrends an image slice before obtaining initialization codes because an image:

> "does not necessarily appear oscillatory and does not necessarily have the short-
> term periodic structure of chaotic waveforms. The solution to this problem can be

achieved by taking the slice data and removing the trend line from the data to
produce a detrended image slice"
(Applicant's spec., pages 12-13).

The mere use of the word "trend" in Bristol does not show or suggest selecting waveforms for detrended image slices – let alone using the associated initialization codes as compressed data. For at least the above reasons, Applicant respectfully requests that the rejections of claims 1, 5, and 8, and any claims dependent there from, be withdrawn.

Orbital Geometrics

Applicant's inventions of claims 1, 5, and 8 teach chaotic compression using orbital geometry to perform the compression.

The '193 patent discusses compression using fractal geometry.

Bristol discusses a non-chaotic compression scheme that utilizes trends as compressed data.

Boothroyd discusses synthesizing audio signals using choatic systems and is silent on compression.

The Examiner stated that "Barnsley does not mention ... the use of orbits which associates with chaotic attractors" (Office Action, page 4). This is because the '193 patent only discusses "fractal geometry" the " mathematics... [of which have] been used to create images that look a lot like clouds, mountains and other forms." (The '193 patent, col. 3, lines 56 and col. 4, lines 17-20). Fractal geometry is not orbital geometry. Orbital geometry produces orbits that can be utilized to generate waveforms that have characteristics very similar to audio data.. Even the '193 patent highlights the dangers of incorrectly relating two different types of chaotic applications:

"merely because the term 'fractal' appears in certain applications does not mean
that the particular 'fractal' techniques referred to are in any technical way related
to other 'fractal techniques referred to in other applications" (The '193 patent, col.
4, lines 12-16).

As the '193 patent is silent on orbital geometrics, the Examiner formed the rejection by stating that "Boothroyd teaches ... the same basic idea of self-similarity that enables Barnsley ... to manipulate image files ... allows Mackenszie and Sander to manipulate audio files" (Office Action, page 4).

Yet, just the manipulation of audio files is not the compression of audio files. It is clear that Boothroyd does not discuss compression using orbital geometry – at all. At best, Boothroyd reviews the state of chaotic research in a variety of institutions. And, none of the research discusses stabilizing orbits to compress any type of data. Mckenzie and Sandler, the research the Examiner focuses on, "aim[s] .. to analyze and resynthesize sound with a relatively simple chaotic system" (Boothroyd, page 5). Merely the suggestion of synthesizing sound using a chaotic system, as discussed in Boothroyd, does not show or suggest compressing sound using a chaotic system – let alone Applicant's feature of generating waveforms for periodic orbits such that the corresponding initialization codes can be used as a compressed file as included in Applicant's inventions of claims 1, 5, and 8.

Accordingly, none of the prior art, used either alone or in combination, show or suggest Applicant's inventions, as defined by claims 1, 5, and 8, of compressing data using orbital geometrics. More particularly, none of the prior art shows or suggests Applicant's inventions, as defined by claims 1, 5, and 8, of including initialization codes as part of a compressed file where the initialization codes are representative of waveforms associated with periodic orbits. For at least the above reasons, Applicant respectfully requests that the Examiner's rejections of claims 1, 5, and 8 be withdrawn.

Even if the art on record discussed all of the features of claims 1, 5, and 9 – which the art does not – the '193 patent cannot be combined with Boothroyd.

In light of the foregoing, Applicant respectfully requests that the Examiner's rejections of claims 1, 5 and 8, and any claims dependent therefrom, be withdrawn.

Applicant's Response to the Examiner's Rejections of Claims 11, 12, 16-25, and 28-32

Claims 11, 12, 16-25, and 28-32 were rejected under 35 U.S.C. § 103(a) over the '193 patent in view of the '600 patent and further in view of Boothroyd.

Claims 11, 12, 16, and 17

As discussed above in connection with claims 1-10, none of the prior art, used either alone or in combination, shows detrending data in combination with obtaining initialization codes for producing waveforms associated to the detrended data as recited in the claims. For at least the above reasons, Applicant respectfully requests that the rejections of claims 11 and 12 be withdrawn.

Claims 18-22

As discussed above in connection with claims 1-10, none of the prior art, used either alone or in combination, shows compressing data using orbital geometry. Furthermore, none of the prior art shows obtaining initialization codes, that are used as part of a compressed file, that are representative of waveforms associated with particular periodic orbits. For at least the above reasons, Applicant respectfully requests that the rejections of claims 18-22 be withdrawn.

Claim 23-25 and 28-32

As discussed above in connection with claims 1-10, none of the prior art, used either alone or in combination, shows compressing data using orbital geometry. Accordingly, none of the art on record shows or suggests using initialization codes, that are used as part of a compressed file, that are representative of waveforms associated with particular periodic orbits to decompress data. For at least the above reasons, Applicant respectfully requests that the rejections of claims 23-25 and 28-32 be withdrawn.

Applicant's Response to the Examiner's Rejections of Claims 13-15 and 26-27

Claims 13-15 and 26-27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the '193 patent in view of the '600 patent and further in view of Boothroyd and further in view of Bristol. Claims 13-15 and 26-27 depend variously from claims 11 and 25 and recite further limitations thereon. Accordingly, for at least the reasons discussed above, Applicant requests that the Examiner also reconsider and withdraw the rejection of these claims.

Application No. 09/756814
Amendment dated September 19, 2005
After Final Office Action of June 17, 2005

Conclusion

Applicant respectfully submits that this application, including claims 1-45, is in condition for allowance. A favorable action is respectfully requested.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 18-1945, under Order No. UON-P01-004 from which the undersigned is authorized to draw.

Dated: September 19, 2005

Respectfully submitted,

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